

INSTRUCTION IN HYGIENE IN INSTITUTIONS OF HIGHER EDUCATION

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CONTENTS

	Page
Foreword.....	v
Beginnings of health instruction.....	1
Earlier surveys.....	5
Health instruction in 1935-36.....	10
Colleges and universities—	
In which hygiene is considered an essential in the curriculum.....	10
Offering a course in hygiene open to all students, but optional.....	18
In which the course in hygiene, open to all students, is not wholly optional.....	22
Junior colleges—	
Requiring hygiene of all students.....	25
Offering a course in hygiene which is optional.....	27
In which hygiene is required of certain groups, but is optional for all others.....	28
State teachers colleges.....	29
Normal schools.....	33
Institutions for Negro students.....	35
Colleges and universities—	
Requiring a course in hygiene of all students or of all students in liberal arts curricula.....	35
Requiring hygiene in the curricula for teacher training.....	36
With elective courses.....	37
Teachers colleges.....	38
Junior colleges.....	38
Professional and technical schools.....	38
Review and comments.....	39
Appendix.....	46

FOREWORD

The material offered in this publication furnishes a general picture of present practices in the presentation of information in hygiene to students in colleges and universities. At college age we have not done with problems of health and even if the subject were taught thoroughly in high school (which is rarely the case) there is much yet to be learned about personal hygiene and concerning our obligations for the health of others.

This publication was prepared by Dr. J. F. Rogers, consultant in hygiene, with the assistance of Stella T. Sebern. It should be of interest to officials who have general direction of the curricula of colleges and universities and to those in personal charge of instruction in hygiene in such institutions.

BESS GOODYKOONTZ,
Assistant Commissioner.

v.

We carry with us the wonders we seek without us: There is all Africa and her prodigies in us; we are that bold and adventurous piece of Nature, which he that studies wisely learns in a compendium what others labour at in a divided piece and endless volume.—**SIR THOMAS BROWNE.**

As vigorous health and its accompanying high spirits are larger elements of happiness than any other things whatever . . . therefore such a course of physiology as is needful for the comprehension of its general truths, and their bearings on daily conduct, is an all-essential part of a rational education.—**HERBERT SPENCER.**

VI

INSTRUCTION IN HYGIENE IN INSTITUTIONS OF HIGHER EDUCATION

BEGINNINGS OF HEALTH INSTRUCTION

THREE hundred and fifty years ago there appeared in London what was probably the first book on hygiene intended for the guidance of students. Its author, Thomas Cogan, master of artes and bachelor of physicke, was certainly not the first teacher to be interested in the health of his pupils but he seems to have been the first to put into print, for their benefit, the science of the day on this important subject. Fifty years before, Sir Thomas Elyot, a high dignitary of the court of Henry the Eighth, had published the first health book in the vernacular, and Cogan, in his work, acknowledged his indebtedness to this earlier author. Cogan called his book "The Haven of Health, chiefly made for the comfort of students, and consequently for all those that have a care of their health." He not only presented the current traditions of hygiene but he endeavored to catch and hold the interest of his students, for his work exhibits a quality, rare in works on this subject, that of humor.

Three hundred years farther back, Roger Bacon wrote a book on How to preserve the Youth, Strength, and Beauty of the Body and Senses and all the Faculties of both Body and Mind, but he anticipated few readers. The work was in Latin, and the cost of even so small a volume must have been prohibitive, save to a small circle. Bacon was exceedingly pessimistic as to public interest in health and, putting his pessimism into statistical form, he figured that not more than 1 person in 3,000 exhibited any interest in hygiene and that only after they had reached advanced years.

Whether or not Cogan lectured to the students of the Manchester school, or heard them recite from his book, or whether he placed the precious volume where they might fall over it and examine its contents from curiosity, we do

not know; but, whatever his method, Cogan deserves the title of father of informational hygiene.

How far in the succeeding centuries, colleges and universities abroad exhibited an interest in the imparting of knowledge relating to health of their students seems not recorded, though doubtless many of them did much along this line. Our first college, in its first year, gave a deplorably poor account of its stewardship in the physical care of its students (all because of the niggardliness of the president's wife—at any rate, she accepted the blame) but, unless some other institution presents a claim to priority, Harvard may be considered the pioneer in health instruction. In the fourth annual report of the president, that for 1828–29, we read, "There is given at Cambridge, to the undergraduates, a course of lectures on hygiene, or the ways of preserving health and prolonging life, beginning on the first Monday of the third term at 11 o'clock a. m. and continued daily except on Saturday, and consisting of seven lectures by Dr. Jackson." This course is listed, without description, in the first annual report (for 1825–26). Dr. Jackson was appointed professor of physic in 1810 and according to his biography by J. J. Putnam the course in hygiene was begun in 1818.

These lectures were given in the senior year and were evidently required of all students. There was also a series of 25 lectures, for seniors, in anatomy, given by the professor of anatomy, Dr. Warren, but this and similar courses for seniors given later at Yale, Dartmouth, Williams, Amherst, and doubtless other colleges were for the purpose of illustrating and bolstering the course in natural theology, considered (by the faculty) the consummation of the student's education. The textbook on this subject by Paley, which first came from the press in 1802, and which held a place for half a century, was largely a work on general anatomy and physiology, with many plates illustrative of the human mechanism. Doubtless the physician who delivered the lectures in this course often instilled information in hygiene, but its chief aim was "to furnish knowledge wherewith to construct an argument for the existence and attributes of God." The

short series of lectures on hygiene, with a more practical, if less lofty, aim than those on anatomy, were continued at Harvard until the year 1847-48.

In the first catalog of Williams, that for 1851-52, the first item of instruction listed for the first term of the first year was Combe on Health and Mental Education. Anatomy and physiology appeared in the schedule for the senior year. Mark Hopkins, who was made president in 1836, studied medicine and practiced for a few years and he doubtless established the freshman course in hygiene and probably the senior course in anatomy and physiology, for he was, already in 1830, the professor of moral philosophy. In the catalog for 1870-71 we read, "The president meets the freshman class for about 2 weeks during the first term, hearing their recitations in Combe on Health, and giving them besides such practical advice as to health, habits, diet, and exercise as seems to him suitable to their needs." "Instruction in physiology and anatomy consists of lectures delivered during the first 6 weeks of the senior year. The subject is illustrated by the skeleton and manikin and is presented as fully as the limited time allows. To this strictly physical treatment President Hopkins adds such further discussion as prepares the way for his metaphysical studies that follow. In addition to this, such advice, as to health, habits, diet, and exercise are given as occasion suggests." Thus at Williams, hygiene was presented to both the entering and the departing classes.

In the College of the City of New York the courses were planned with "reference to the active duties of operative life, rather than those more particularly regarded as necessary for the pulpit, bar, or medical profession." A course in anatomy, physiology, and hygiene was introduced in 1851 and taught by Dr. Robert O. Doremus. In 1853, 20 bronze medals, one for each subject of the curriculum, were awarded and one of these was given to the student doing best in "hygiene." At Tufts in 1854, under the president of trustees, Oliver Dean, M. D., physiology was required in the sophomore year and hygiene in the junior year. The first president, a clergyman, discontinued these subjects in 1856.

At Amherst, aside from lectures on anatomy for senior students (given as early as 1823), it was not until 1860-61 that a course was initiated in the first term of the freshman year on the "laws of study, the laws of health, etc." The lectures were given by John W. Hooker, M. D., newly appointed professor of hygiene and physical education. These lectures were continued by Dr. Hitchcock, who succeeded Dr. Hooker.

In the initial announcement of Cornell, founded in 1868, it was stated that prominence would be given "to studies which will be practically useful, including human anatomy, physiology, and the laws of health. A course of 20 lectures in these subjects was required of all freshmen until 1904 when it was offered but not required."¹

Mount Holyoke College was founded in 1836, and physiology and hygiene were given a place in the program of its first-year students. The colleges for women were not intent on turning out doctors of divinity, law, and medicine, and courses in hygiene were made cornerstones in the curricula of such schools as Smith, Wellesley, and Vassar.

Hygiene was prominent in the curriculum of the first State teachers college founded in 1834. This was to be expected, for Horace Mann was the prime mover in its establishment and it was taught with the double purpose of promoting the health of the teacher and of preparing her for preserving the health of her pupils. The textbook was that by Combe, mentioned in a previous paragraph as used at Williams. Combe was an Edinburgh physician whose works were deservedly popular. Thirty thousand copies of one of them is said to have been sold in the United States within 6 years of issue. We have direct and detailed testimony as to the thoroughness and practical nature of the instruction furnished in that first training school in the diary of one of the students of its first year, Mary Swift. Possibly the teaching in this field has rarely been done more conscientiously.

A search through the available records of the 35 or so colleges and universities which existed a hundred years ago

¹ Smiley, D. F. Organization of the health program of a university. Public Health Reports, Nov. 19, 1926. pp. 2631-2649.

fails to show more than 2 institutions which required or offered a course in hygiene. A half century later the number of institutions had multiplied tenfold, but it is probable that the percentage of those requiring or offering a course in this subject was not much larger in 1885 than it was in 1835. In the past 50 years Greek and Latin and Theology (natural or unnatural) have been giving place to matters more nearly concerned with life and living, and hygiene has been finding a place on prescribed or on elective programs.

EARLIER SURVEYS

In 1876, Dr. Henry I. Bowditch, of Boston, became interested in what was done in colleges and universities in the way of instruction in hygiene. He wrote to 62 out of 300 institutions then existent and came to the conclusion that "instruction on public hygiene and State preventive medicine is woefully neglected" and "on private hygiene only about one-third of the colleges give any instruction."²

In 1885, Dr. Hartwell² collected statistics from 46 principal institutions, including the United States Military and Naval Academies and the National Deaf-Mute College. In 35 of these schools (more than 75 percent) instruction, "practical and theoretical", was given in hygiene, and in 19 it was a required subject. The number of lectures, or of lectures and recitations, ranged from 14 to 130 with an average of more than 53 exercises. In only 1 was the number less than 20. In 19 the instruction was furnished by a physician; in 3 by the professor of biology; in 5 by the professor of natural history; and in 2 by the professor of chemistry and physics. A textbook was used in 16 of these schools and 10 different books are mentioned.

In 1910 Dr. Meylan reported the study by a committee of the American Physical Education Association of a selected group of 138 institutions of which 124 replied to the questionnaire.³ Of this group 70 percent reported "regular

² Hartwell, E. M. *Physical Training in American Colleges and Universities*. Washington, Government Printing Office, 1886.

³ Meylan, George L. *The Status of Hygiene in American Colleges and Universities in the United States*. *American Physical Education Review*, 15: 446-452, June 1910.

instruction" in hygiene and in 50 percent it was a required subject with credit.

In 1918 Professor Howe sent a questionnaire to 79 colleges and universities "listed by the Carnegie Foundation." Of these 61 percent reported a required course in hygiene; but 13 percent of these courses were "irregular" or courses incidental to physical education.⁴

The United States Interdepartmental Social Hygiene Board and the American Social Hygiene Association did much during the World War to interest colleges and universities in the teaching of hygiene, and the President's Committee of Fifty on College Hygiene, organized in 1922, had for its object the "stimulation, development, and extension of instruction and training in hygiene in normal schools, colleges, and universities." Dr. Thomas A. Storey,⁵ secretary of the executive committee of the president's committee, made inquiries of 646 institutions as to what they were doing along these lines. The study was begun in 1923 and completed in 1926. Reports were received from 142 colleges and universities, 33 teachers colleges, 28 normal schools, 67 medical schools, 40 dental schools, 21 schools of nursing, 10 physical education schools, and 101 theological schools.

Of the colleges and universities furnishing information, 57 percent reported a required course in informational hygiene, 60 percent of the teachers colleges, 70 percent of the normal schools, 92 percent of the medical schools, 90 percent of dental schools, 90 percent of private physical education schools, and 6 percent of the theological schools. The amount of time devoted to the subject is shown in the accompanying table.

⁴ Howe, E. C. Health of the College. American Journal of Public Health, 9: 749-760, October 1919.

⁵ Storey, Thomas A. The status of hygiene programs in institutions of higher education in the United States. A report of the President's Committee of Fifty on College Hygiene. Stanford University Press. Stanford University, Calif., 1927.

HOURS PER WEEK AND NUMBER OF TERMS OF REQUIRED INFORMATIONAL HYGIENE COURSES

Requirements	Colleges and universities	Teachers colleges	Normal schools
1	2	3	4
$\frac{1}{4}$ year:			
3 hours.....		1	
4 hours.....		1	
$\frac{1}{2}$ year:			
1 hour.....	4	1	1
2 hours.....	1	1	
3 hours.....	1	2	1
4 hours.....			2
5 hours.....		1	
1 term ($\frac{1}{2}$ year):			
1 hour.....	21	2	
2 hours.....	2		2
3 hours.....		1	2
4 hours.....	1	1	
5 hours.....			1
6 hours.....			
$\frac{3}{4}$ year:			
1 hour.....	1		
3 hours.....		1	
2 terms (1 year):			
1 hour.....	12		3
2 hours.....	3	1	
3 hours.....			
$1\frac{1}{2}$ years:			
2 hours.....		1	
3 hours.....			1
3 terms ($1\frac{1}{2}$ years):			
1 hour.....			
2 hours.....	1		
4 terms (2 years):			
1 hour.....	2		
2 hours.....			
3 hours.....	1		
7 terms: 1 hour.....			
Time not definitely stated.....	4	2	6

Dr. Storey commented as follows:

In 50 of these 61 colleges and universities the entire amount of time devoted to the presentation of information concerning hygiene is limited to a total of 32 scheduled hours or less; in 4 of the 50, the total is only 12 scheduled hours; and in 24, it is only 16 scheduled hours. Compared with those of 64 hours, 96 hours, and 192 hours, these totals represent a wide and illogical difference in educational emphasis and institutional policy in the presentation of required informational hygiene.

The sizes of classes as reported were:

Institutions	Colleges and universities	Teachers colleges	Normal schools
1	2	3	4
Average sections of—			
Fewer than 20.....			
20-29.....	2	1	3
30-39.....	12	6	6
40-49.....	3	2	4
50-59.....	5		1
60-69.....	3		1
70-79.....	10		
80-89.....	1		
90-99.....			
100-149.....	7	4	
150-249.....	8		2
250 or more.....	6	1	
Data incomplete.....	24	6	3
No courses required.....	61	13	8
Total.....	142	23	28

Dr. Storey remarked:

In the great universities there may be 500 or more students in one of these classes. It is common practice to subdivide large classes into smaller sections. But even the classes or sections in which students are scheduled for instructional purposes are very often too large for the use of satisfactory methods of instruction. Effective teaching in any field is more likely to be done with sections of an enrollment of approximately 20.

The summary of conclusions concerning the informational hygiene programs was as follows:

The current practice of some of the educational institutions in every one of these eight groups establishes the fact that it is possible and practical for all the institutions of every group to cover the whole field of informational hygiene in conformity with accepted processes of tested educational method.

But the deficiencies and defects of the required informational hygiene programs in every one of these groups are such as to make their educational influence on the student and through him on the citizen and the public of the future relatively insignificant. Over 43 percent of the colleges and universities, 39 percent of the teachers colleges, 23 percent of the normal schools, and 93 percent of the schools of theology reported here have no required informational hygiene programs at all. In every one of these eight groups, there is a common neglect of subjects that deal with family and other group hygiene and, excepting the medical-school group, with public or other intergroup hygiene. Sex-social hygiene and mental hygiene are commonly omitted. The medical schools, dental schools, and nurse-training schools, whose curricula are made up of scientific subjects that are basic to hygiene,

commonly neglect their opportunities to use this native hygiene. They usually omit an emphasis of general hygiene, individual hygiene, and family hygiene. As a rule they pass over constructive and defensive mental, somatic, and sex-social hygiene. Their main emphasis is logically on curative and preventive medicine.

In approximately half the colleges and universities, teachers colleges, and normal schools from which pertinent reports were secured, the conditions under which the required informational hygiene courses are given are so adverse to successful instruction as to make it certain that a large amount of that teaching is ineffective and therefore wasted.

With the facts before us there can be no question that the college education of the lay citizen in the making is deficient and defective in its informational hygiene methods and content. In general, the student is not supplied with adequate scientific information nor with a type of instruction that will help him as a lay citizen in the formation of intelligent, discriminating judgments for the solution of his problems of personal, family, or public health. His college informational hygiene as a general rule does not help him select wisely his health literature, his health advisers, or his health service.

The professional education of the physician, the dentist, and the nurse, as shown in these reports, is also largely deficient in its informational hygiene content. These health experts are informed primarily in the sciences and arts of taking care of the sick. The information of special value to the health welfare of the apparently well is commonly omitted or neglected.

The professional education of the teacher graduated by the private schools of physical education is largely deficient in its content of informational hygiene. The high-school graduate, with the 2 or 3 years of the instruction in physical education given in most of these schools, cannot emerge as a well-informed instructor and adviser in mental, somatic, or sex-social hygiene.

Finally, the religious leader produced by these 101 theological schools is in general less well supplied with scientific information concerning hygiene than any other of the types of health leader herein described. The men on whom members of church congregations will later depend collectively and individually for guidance and advice in relation to mental, emotional, spiritual, and physical health troubles are usually given little or no scientific information related to the service expected of them.

In 1927, Dr. Ready published a study of physical education, military training, and hygiene in 182 selected colleges and universities.⁶ Eighty-three of these institutions (about

⁶Ready, Marie M. Physical education in American colleges and universities. Bureau of Education Bulletin, 1927, No. 14. Government Printing Office, Washington, D. C., 1927.

45 percent) reported a required course in personal hygiene, although only 36 (20 percent) allowed semester-hour credit. The amount of credit was: One-fourth hour in 1 institution; one-half in 2; two-thirds in 1; 1 hour in 17; 1.3 in 1; 1.5 in 1; 2 in 10; 2.6 in 1; and 3 in 2.

HEALTH INSTRUCTION IN 1935-36

In the present investigation an inquiry was sent to all of the 1,662 institutions of higher education (1,555 for white and 107 for Negro students) listed in the Educational Directory of the Office of Education for 1935. A reply was received from about 65 percent of them.

The institutions fall into the following general groups: (a) Colleges and universities, of which 644 schools for white and 56 for Negro students were listed in 1935; (b) junior colleges, 426 for white and 22 for Negro; (c) State teachers colleges, 158 for white and 13 for Negro; (d) normal schools, 80 for white and 13 for Negro; (e) professional and technical schools, 247 for white and 3 for Negro students.

COLLEGES AND UNIVERSITIES

Of the 644 colleges and universities for white students, 63 percent returned the questionnaire and 327, or about 50 percent of all these institutions, report a course in personal or community hygiene. In 145, or about 22 percent (35 percent of those which replied), this course is required of all students seeking a degree in liberal arts or in this and other departments of instruction; in 10 coeducational schools it is required of all women; in 100 (25 percent of those responding) it is optional for all; and in 80 (20 percent of this group) it is optional for students of the liberal arts curricula but required of students in some other department.

COLLEGES AND UNIVERSITIES IN WHICH HYGIENE IS CONSIDERED AN ESSENTIAL IN THE CURRICULUM

One hundred and twenty-five colleges and universities report a course in hygiene which is required of all students, of all candidates for degrees, of all freshmen, or of all students of the course in liberal arts. In four colleges it is also

required of students in liberal arts and of those studying music; in two, of students in fine arts; in three, of education, engineering, and commerce; and in one each, those in practical arts, engineering, education and agriculture, engineering and business administration, architecture, engineering and home economics; all students except those in engineering; all except those in pharmacy; all except vocational students; and all except those in home economics.

Thus in 145 colleges and universities a course in hygiene is required of at least all students aspiring to a degree in liberal arts and, in 10 more, of all women candidates for this honor.

Of the total schools with a required course for those seeking the B. A. or B. S. degree, 102 are coeducational, 8 are for men, and 23 for women. About 25 percent of all coeducational institutions are in the group, about 23 percent of those for women, and only about 8 percent of those for men. Of the 20 universities having the largest enrollments (all but 2 are coeducational) 10 report required courses. In three of the colleges the course in hygiene is required only of "students excused from physical education" and in another of "students having physical defects."

Length of course.—The time devoted to hygiene in the colleges and universities of this group varies from 6 to 144 hours. One institution reports a course of 6 lectures; 1 of 7 lectures; 1 of one-quarter semester hour; 1, one-half semester hour; in 42, 1 semester hour is devoted to the subject; in 1, $1\frac{1}{2}$ semester hours; in 60, 2 semester hours; in 1, $2\frac{1}{2}$ semester hours; in 9, 3 hours; in 1, 6 hours; and in 2, 8 semester hours.

Year in which course is offered.—Of the colleges and universities furnishing information, 100 offer the course of hygiene in the freshman year; 16 in the freshman and sophomore years; 9 in the sophomore; 3 in the freshman, sophomore, and senior; 3 in the freshman, junior, and senior; 2 in the sophomore, junior, and senior; 1 in the freshman, sophomore, and junior; 1 in the freshman and junior; 1 in freshman and senior; and 7 in all years.

Topics covered.—This group of colleges and universities report the following topics as covered by their course:

Topic:	Percent
Bacteriology and communicable disease.....	85
Reproduction and development.....	80
Sex hygiene.....	80
Mental hygiene.....	80
Community hygiene.....	70
Human anatomy and physiology.....	70
Medical care, drugs, narcotics.....	70
First aid.....	60
Home hygiene.....	55
Child care.....	33
Comparative anatomy.....	20
Personal hygiene is mentioned by all giving data on this point.	

The subject of child care is not confined to curricula for women nor is it presented in all institutions which enroll women in these classes.

Size of class.—The number of students per class is given as not more than—

Students in Colleges		Students in Colleges		Students in Colleges	
10.....	1	50.....	21	100.....	13
15.....	2	60.....	5	125.....	5
20.....	6	65.....	1	135.....	2
25.....	10	70.....	1	150.....	6
30.....	34	75.....	1	175.....	1
35.....	12	80.....	2	200.....	3
40.....	11	90.....	3		

In about 25 percent the class does not exceed 30 members; in about 40 percent, there are not more than 40; in 60 percent, there are not more than 50; however, in 40 percent it does exceed this number.

In a few instances a wide range as to class numbers is mentioned as: 10-50; 50-150; 30-150; 2-100; 15-125, etc., but apparently the smaller figure stands for recitation or demonstration classes and the larger for lecture groups.

There is no relation between size of class and size of institution nor is there a relationship with the length of course.

Rank of instructor.—Seventy-two of these institutions mention one member of the faculty as concerned in health instruction. In 37, the teacher has the rank of "professor"; in 3, he is an "associate professor"; in 4, an "assistant professor"; in 20, he is an "instructor"; in 6, he is a "director of physical education."

Twenty-five institutions mention two of the faculty as participating in instruction; professor and associate pro-

fessor in 6; professor and assistant professor in 1; professor and instructor, 6; associate and assistant professors, 2; associate professor and instructor, 1; assistant professor and instructor, 6; director and assistant director, 1; director and instructor, 1.

In 1 institution a professor, associate professor, and assistant professor participate in the instruction; in 3, a professor, associate professor, and instructor; in 1, a professor, assistant professor, and instructor; in 3, an associate professor, assistant professor, and instructor; and in 1, an assistant professor, lecturer, and instructor.

Professional training.—The major interests during the professional training days of those serving as teachers in this group of colleges and universities were: Medicine, 45; physical education, 33; biology or zoology, 19; hygiene and public health, 12; health and physical education, 8; nursing, 5; physiology and hygiene, 3; health education, 3; anatomy and physiology, 2; bacteriology, 2; chemistry, 2; bacteriology and child development, 1; health and recreation, 1; athletics, 1; speech and dramatics, 1; speech, 1; military training, 1.

The highest academic title obtained by the instructors were M. D., 45; Dr. P. H., 4; Ph. D., 15; D. Sc., 3; M. P. H., 1; M. S., 8; M. A., 23; C. P. H., 1; M. Ed., 2; B. P. E., 4; B. S., 12; B. A., 11; R. N., 5; E. E., 1; diploma in physical education, 1; Army officer, 1.

Method of instruction.—The question was asked whether the method of instruction was "dominantly by lecture" or "by textbook and recitation." Both inquiries were answered "yes" by many respondents, which probably means that both methods are used with especial emphasis on neither. The lecture method alone was checked by 38 institutions (roughly 25 percent); the use of textbook and recitation by 23 (15 percent); while both questions were checked by 51 (35 percent). The word "conference" was used by one school and "discussion" by another to describe the predominant method. The questions were unanswered by a few schools.

The method of instruction includes laboratory or other demonstrations in 59 institutions (40 percent); written exer-

cises in 113 (75 percent); sanitary surveys and reports in 48 (33 percent); and printed or mimeographed outlines of lessons are furnished by about 35 percent.

Equipment.—By way of equipment 65 percent have a skeleton, 60 percent casts and models, 80 percent use wall charts, 40 percent have physiological apparatus, 45 percent use microscopes and slides, 25 percent use motion pictures.

About half of those who responded considered their outfit for demonstration adequate.

Value of equipment.—The value of the equipment, where an estimate was furnished, varied from \$12 to \$30,000. Where the equipment was considered inadequate the range was from \$12 to \$5,000, with an average of \$1,000. Where it was considered adequate the range was from \$100 to \$30,000, with an average of \$2,700. In only 7 institutions was the apparatus valued at \$100 or less; in 6 it was worth from \$150 to \$200; in 2, from \$175 to \$300; in 2, \$400; in 8, \$500; in 3, between \$700 and \$800; in 7, \$1,000; in 5, from \$1,400 to \$1,800; in 7, from \$2,000 to \$3,000; in 1, \$3,500; in 3, \$5,000; in 1, \$10,000; in 1, \$13,000; and 1, \$30,000. One respondent notes that "cooperation and use of material from other departments reduces the cost of equipment."

Both the United States Naval Academy and the United States Coast Guard Academy (which are classed as professional schools) have a course in hygiene of 17 hours, required of all students, while the United States Military Academy reports a course of 32 hours.

The matter of credit.—Where a subject of instruction is "required" it would seem to matter little whether or not "credit" is considered in this connection. This is especially true of instruction having to do with something so vital as health. It would seem that one might as well expect credit for eating, or sleeping, or participation in pleasurable physical activities. On the other hand, if hygiene is so important should it not, above everything else, be given credit? That the average student in the average course does not consider it of such importance even when he receives credit is evident from the fact that only about 5 percent elect the subject. The importance of credit is noted in the remark of a respondent who says, "No credit is given for

our course. This is not a satisfactory arrangement and many students do not take it seriously."

Theory aside, of 145 institutions requiring a course in hygiene of all or of certain groups of students, credit is granted (usually according to class hours) in all but 35, or in more than 75 percent. In 27 of the 35 no credit is given, and in the remaining 8 the course is "a part of the physical education requirement." Whether credit is allowed for the physical education course we do not know.

Comments.—Comments on "experience in regard to time needed for adequate instruction, methods of instruction, etc.", were requested and we give some of the responses.

Because the lecture method seemed to be inadequate and the textbook method more desirable we have decided that the course will be 1 hour a week throughout the semester (18 weeks) and will be given one credit. (The course has hitherto consisted of 12 one-hour lectures with no credit.)

Presentation is about evenly divided between lectures and class discussions or recitations. Textbooks are used in all courses.

Each student is required to study some project about the campus that would improve the condition of students if applied in a practical manner.

Time inadequate (2 semester hours).

Time too limited (1 semester hour).

Time too short and spread out (2 semester hours). We are changing to a series of individual conferences and group lectures to all entering students. Attendance will be required but no credit given. In addition there will be a 3-hour elective course carrying 3 hours' credit.

Very well satisfied with time allotted (4 semester hours), but some increase could be used advantageously.

Personal conferences demand time but we consider them important.

We consider our time too short (1 semester hour) and we have under consideration its extension.

Course should be compulsory for all undergraduates with advanced courses for juniors and seniors. Two hours a week for one or two semesters would be adequate. Should be handled in small sections.

Course should be longer (3 credit hours instead of 2). There should be more laboratory work.

All undergraduates must pass an examination in hygiene before graduation * * *. No credit is given for our course

and this is not a satisfactory arrangement and many students do not take it seriously. Demonstration material seems to make much more lasting impression than description of organs, systems, etc., in the course of lectures.

Class should meet twice instead of once a week.

Two semester hours is insufficient. Size of class, 120, is too great. It eliminates personal discussion which is essential for good work.

Course should be a 2- instead of 1-semester-hour course. Classes (70-80) are too large.

A 3-semester-hour course is the minimum for adequate instruction in personal and community hygiene.

One semester hour is quite inadequate.

Under our plan the class is divided into groups of from 12 to 15—small enough so that the discussions can be informal and allowance made for participation of every individual.

Time (1 semester hour) should be increased.

Time (36 hours) is not adequate.

Time insufficient. We could do a fair job with 2 semester hours, but we really need 3.

Time (2 semester hours) insufficient.

A "freshman browsing shelf" is said (by the librarians) to be very steadily used.

For a worth-while course I would suggest the lecture method for the entire group together with quiz sections for small groups, with not less than two lectures a week for a semester for personal hygiene alone and another course for home and community hygiene.

It would improve the course to have it meet twice a week for one semester rather than once a week for two semesters. One laboratory period a month would be helpful also.

We have found that students are vitally interested in health if it is taught on a physiologic basis. Moving pictures of various physiologic processes are especially stimulating, and X-ray films, charts, etc., are necessary. Students are very much interested in information concerning sex.

The time devoted to this subject (15 hours) is entirely inadequate to develop it completely. It is hoped that eventually it will be given equal rating with other full-semester courses.

A 1-semester 3-hour course would be infinitely preferable to a 1-hour 3-semester course. When hygiene is offered in the sophomore year (instead of freshman year) students attack it with more maturity and seem to gain more from the course.

From past experience a lecture course of 2 semester hours adequately covers the work. Most texts bore the student; they are

too elemental. One term paper each term is a decided help. Charts are exceedingly valuable.

Freshmen need human physiology before they can apply the personal hygiene as intelligently as we desire. Therefore, we have bought many excellent models of the human organs and teach their functions before attempting to teach hygiene.

We would prefer 2 hours per week for one semester instead of 1 hour as at present.

Our chief aim is to interest the student in solving his own health problems and to cultivate in him the habit of utilizing the best available services when his own resources are insufficient.

Our course is 1 hour per week for the college year. It should be 2 hours for the year.

It is our desire to limit our classes to sections of 25 each and we believe that more time should be devoted to each subject than we are now able to spend. In other words, we think instead of having two 3-hour courses and three 2-hour courses on a quarterly basis, it would be better if we had more units in each course for each quarter. We would like to develop a much more effective graphic method of presenting facts in this field and we believe very thoroughly in setting up projects which necessitate the student getting his information himself and drawing his own conclusions through the use of his own thinking processes.

Time for instruction (1 hour per week for a year) is quite inadequate.

I think the lecture-quiz method, with occasional demonstrations and as many projects as possible the best method of instruction.

One semester hour is certainly inadequate and we are contemplating a change to 2 hours.

We had one class (composed of F. E. R. A. students) which met three times a week one semester. We found interest better sustained than in the classes meeting once a week throughout the whole year.

I realize that our course (which is now handled by the department of physical education) is not adequate. We should prefer an instructor with medical training with the provision of adequate equipment.

Three semester hours is the minimum that is needed. No one with less than a master's degree should be allowed to teach it.

We should have smaller sections (these now number 60 students) and more discussion and perhaps more field work.

Owing to the different degrees of preparation possessed by matriculants, it is proposed to give a comprehensive examination to entering classes with the provision that those who pass the examination may elect two other units in an allied field instead of the required freshman hygiene.

Our course in personal hygiene is required of all entering students who have not had its equivalent or do not pass an exemption examination.

COLLEGES AND UNIVERSITIES OFFERING A COURSE IN HYGIENE
OPEN TO ALL STUDENTS, BUT OPTIONAL

Of the 648 colleges and universities, 100, or 15 percent of all, report a course "open to all students" which is "wholly optional." We are quoting the words of our question. It is quite probable that in a large proportion of the institutions of this group, the course mentioned was not planned specifically for the benefit and information of the average student but as a course having a bearing upon the student's professional interests.

Percentage who elect this course.—Two institutions of this group report the percentage who elect the course in hygiene as "very small"; 1 reports 0.2 percent; 1, 0.6; 3, 1; 1, 2; 3, 3; 5, 4; 4, 5; 1, 6; 5, 7; 4, 8; 1, 9; 13, 10; 8, 15; 1, 16; 6, 20; 5, 25; 4, 30; 5, 50; 2, 60; 1, 65; 3, 75; 1, 80; 1, 90; and 1, 95 percent. One institution reported that a course was offered but that in the present year there were no students.

In the 82 schools furnishing information somewhat more than half have an enrollment in these classes of 10 percent or less and in 30, or more than one-third, not more than 5 percent attend these classes.

The matter of attendance in these courses will be mentioned again.

Length of course.—One institution reports a course lasting 12 hours; 5, a course of 1 semester hour; 1, 44 hours; 31, 2; 27, 3; 12, 4; 1, 5; 6, 6; 1 school reports 75 hours in physiology and hygiene and 75 of community health. About 90 percent of the schools reporting offer a course of at least 2 semester hours. About one-fourth of this group did not furnish information on the subject. In the previous group about 55 percent reported a course of 23 hours or more.

These figures seem to support the idea that the courses referred to in the present group are chiefly courses for those majoring in biology, physical education, medicine, etc.

Year in which course is offered.—In 14 institutions the optional course is offered in the freshman year; in 8, in the sophomore year; in 4, in the junior; and in 2, in the senior year. In 21 it is offered in the freshman and sophomore years; in 12, in the freshman, sophomore, and junior; in 5, in the sophomore and junior; in 9, in the sophomore, junior, and senior; in 8, in the junior; and in 16, in "any" or "all" years. In only about 15 percent is the course offered in the freshman year, and in 24 percent it may be taken in the freshman and sophomore years. In the colleges and universities requiring a course, 70 percent present the course in the freshman year and 11 percent in the freshman and sophomore years. Evidently, in not more than 15 percent of the institutions of this present group is the welfare of the newly arrived student kept in mind.

Size of class.—In 4 schools the size of class is reported as "small"; in 7 it is not more than 12 students; in 1 it is not more than 14; in 7 it is 15; in 2, 16; in 1, 17; in 1, 18; in 13, 20; in 8, 25; in 19, 30; in 7, 35; in 7, 40; in 2, 45; in 5, 50; in 1, lectures are given twice a week to 75 with a quiz class of 25 once a week; in 2, the class reaches 90; in 1, 100; and in 1, from 250 to 350. In about two-thirds the class does not exceed 30.

Academic rank of teacher of hygiene.—In 35 of these institutions, or more than a third of them, the teacher or one of the teachers, ranks as a professor. More specifically he is reported as a professor of biology by four schools, as a professor of physical education by four, and as professor of physiology and hygiene by one. In nine the highest ranking teacher is an associate professor; in eight, an assistant professor; in two, a director of physical education; in eight, an instructor; and in one, an assistant in physical education. In 22 institutions the teacher has the degree of doctor of medicine; in 1, doctor of public health; in 2, doctor of science; in 21, doctor of philosophy; in 26, master of arts; in 5, master of science; in 5, bachelor of arts; in 2, bachelor of science; in 1, bachelor of education; in 1, bachelor of physical education; in 1 bachelor

of science; in 1, registered nurse; and in 1, doctor of dental surgery.

Interests of instructor.—In his days of professional training the major field of interest of the principal instructor in hygiene is given as medicine by 18; biology by 16; zoology by 15; bacteriology by 4; public health by 4; botany by 4; bacteriology and public health by 1; hygiene by 1; human physiology by 2; physical education by 9; physical education and health by 4; invertebrates by 1; entomology by 1; anatomy and embryology by 1; chemistry by 2; political science and French by 1; science by 1; education by 2; home economics by 1; nursing by 1; dentistry by 1.

Method of instruction.—Instruction is chiefly by lecture in 34 of these schools, by textbook and recitation in 25, and in 33 both methods are employed. Laboratory work is reported by 62 institutions, written exercises by 77, sanitary surveys by 33, and printed outlines of lessons are used by 28. The fact that more than 75 percent of this group of schools report laboratory demonstrations in comparison with 40 percent of the first group again points to biological courses with incidental reference to hygiene in many of the institutions with courses "optional" for the average student.

By way of outfit for demonstration the use of a skeleton is reported by 63 of this group, casts and models by 59, wall charts (charts are inexpensive) by 79, physiological apparatus by 45, microscopes and slides by 45, and motion pictures by 19. No apparatus was mentioned by 14.

Forty-six schools furnished an estimate of the value of their materials for demonstration. In 27 the apparatus was considered adequate for the purpose and in these institutions the valuation ranged from \$50 to \$20,000 (in 2 the cost was \$3,000), with an average of about \$1,700. In the group in which the outfit was considered inadequate the range was from \$10 to \$5,000 (with a cost in two schools of \$3,000). The average of the valuations was \$900.

Comments.—The following are some of the comments made by those who answered our questions:

We offer the course whenever there is a demand for it, perhaps every other year or so.

Class meets 2 hours a week for 1 semester and time is scarcely adequate. Students have poor background for the study of

this subject. Much elementary instruction is needed before they grasp the main principles. (Teacher has a M. A. in science and no equipment for demonstration is reported.)

Equipment (valued at \$1,000) is not used exclusively for this course.

Classes separated for instruction in sex hygiene. These classes are conducted according to the professor's own method, namely: After a few introductory and explanatory lectures the lectures are based entirely on topics suggested by questions asked by the students.

There should be a required course of 2 hours in the first semester of the freshman year in personal hygiene.

Assignment of definite subjects for research and reports was found helpful and interest arousing.

About 60 hours of lecturing are needed for hygiene with objective rather than subjective teaching. Textbooks available are wholly inadequate.

Every undergraduate should be required to take a 4-hour course in hygiene as a part of the required number of hours for graduation.

The combination of lecture and textbook assignments has proved most satisfactory. A 10-minute slip test is given at the beginning of each class period and has been found most helpful in stimulating the student to prepare the daily assignment.

I find that the consideration of such topics as inflammation, regeneration and repair, embolism and infraction, are necessary to an understanding of disease processes. Without them it seems almost hopeless to try to give students a real idea of what disease and disordered function mean. The same is true for immunology.

We need more time (we now have 2 semester hours) and money. (We have very little equipment.)

Four lectures are given each week and 4 hours of laboratory work. Time for 1 hour a week of conference would be helpful. Course was formerly required. This year 95 percent of students elect the course. They have always found the course helpful and I think would rather take it than not.

Our course is offered to meet State requirements for State normal work. Care is necessary to keep it from overlapping with our science department courses in physiology, embryology, histology, and comparative anatomy.

As is the case in most colleges, students have too many required courses to elect this subject even if they desired.

Students come to us in hygiene with the idea that they have little to learn. It is hard to make this work of college grade if they have had a good course in high school; too much of it is review. We think it is worth while but it is very hard to teach because students think it is too simple to study.

Three hours for one term is too brief to cover subject satisfactorily. However, it is well worth while in giving some information to develop some individual initiative in investigation and impress upon their minds the college-trained individual's opportunities and responsibilities.

Efforts to teach would be much more effective if classes were small (they now number 250-300) and if they met in a room amply provided with a skeleton, casts and models, charts, and a projection instrument which could be used informally. Laboratory work would add much to the interest and effectiveness of instruction.

The course should be required of all freshmen and given to large sections as a series of health lectures on the art of living.

COLLEGES AND UNIVERSITIES IN WHICH THE COURSE IN HYGIENE,
OPEN TO ALL STUDENTS, IS NOT WHOLLY OPTIONAL

Eighty-four colleges and universities report a course in hygiene open to all students but which is required in certain curricula. In 50, or more than one-half of this group, it is required of students in education (about 70 colleges and universities prepare teachers of kindergarten and primary grade) in 28 of those majoring in physical education; in 7, of students of nursing education; in 7, of students in home economics; in 7, of biology and premedical students; in 6, of those in the school of science; in 3, of those studying social service; in 1 each of students in sociology, agriculture, dairy industry, engineering, business, speech, organ music, fine arts. In 1, hygiene is required of students excused from physical education. Just why some of these groups are favored with a course supposed to benefit their health while all the rest are exempt is not made clear unless the non-exempts were in need of "busy work."

Those electing course.—In 1 of these institutions the course in hygiene is elected by 0.75 percent of the students; in 1, by 0.28 percent; in 5, by 1 percent; in 3, by 2 percent; in 4, by 3 percent; in 2, by 4 percent; in 10, by 5 percent; in 2, by 7 percent; in 1, by 8 percent; in 10, by 10 percent; in 1, by 12 percent; in 3, by 15 percent; in 2, by 20

percent; in 4, by 25 percent; in 1, by 30 percent; in 1, by 35 percent (many more wanted the course but could not be admitted); in 1, by 50 percent; in 1, by 60 percent; and in 2, by 90 percent. Two institutions report the number as "very small", and 26 do not report the percentage. Possibly in these schools the course was not patronized by other than those of whom the course was required. It will be noted that the course is elected by 5 percent or less in about 45 percent of these schools and by 10 percent or less in 50, or about 60 percent.

Length of course.—The length of course is given as 6 hours by 1 institution; 1 semester hour by 4; $1\frac{1}{3}$ by 1; 2 semester hours by 27; 3 semester hours by 22; $3\frac{1}{3}$ by 1; 4 semester hours by 9; 5 semester hours by 3; 6 semester hours by 14.

Year in which course is offered.—The course is presented in the freshman year in 17 schools; in the sophomore in 9 schools; in the junior year in 5; and in the senior year in 1; in the freshman and sophomore in 14; in the freshman, sophomore, and junior in 2; in the sophomore and junior in 4; in the sophomore, junior, and senior in 9; in the junior and senior in 8; and in "any" or "all" in 9.

Subjects offered.—A tabulation of all the subjects checked on our questionnaire was not made, but bacteriology is touched upon by 90 percent, mental hygiene by 70 percent, and sex hygiene by 65 percent.

Size of class.—Classes not exceeding 6 are reported by 1 school; 7 by 1; 11 by 1; 15 by 4; 20 by 9; 25 by 7; 30 by 16; 35 by 9; 40 by 11; 45 by 1; 50 by 6; 55 by 1; 60 by 4; 65 by 1; 70 by 3; 80 by 2; 90 by 3; 100 by 3; 120 by 1; and 150 by 1. The class does not exceed 40 in 60 percent and is not larger than 50 in 70 percent.

The instructors.—The data concerning the rank of the principal teacher and his training does not differ much from that reported by the groups previously mentioned. In 18, or about 20 percent, 1 of the instructors is a physician; 23 instructors were especially trained in biology or zoology; 4 in physiology; 5 in bacteriology; 2 in bacteriology and public health; 12 in physical education; 4 in education; 3 in chemistry; and 1 in nursing. From the large percentage of these instructors who were prepared in biology, zoology, and

bacteriology one may guess that hygiene is offered in connection with courses in these sciences.

Methods.—Instruction is chiefly by lecture in 29 of this group, by textbook and recitation in 21, and both are used in 31. Laboratory demonstrations or exercises are reported by 58 schools, written exercises by 72, surveys by 40, and the use of prepared outlines by 34.

Equipment.—The statistics for equipment do not differ materially from those in the previous group. Thirty, or about 35 percent, report the use of motion pictures, and two institutions say they "have used them." Four schools make use of a stereopticon.

In 46, or more than half of these schools, the equipment for teaching is considered adequate. It is mentioned by several respondents that the total equipment of the department of biology is at the disposal of the instructor.

Comments.—The following are some of the comments of those who responded to our questions:

Our course is only 3 years old. As soon as budgets permit we will obtain a skeleton, charts, etc. ➔

Special lectures are given by local physicians, members of the department of health, and members of the faculty.

Our course is primarily for grade teachers.

We have guest specialists come for three or four lectures and demonstrations each year.

I believe a course should be of college grade and should receive full college credit.

College students do not practice what we preach but they are interested and need to know the facts rather than fiction.

A plan is being worked out whereby certain standards of knowledge will be tested by standardized achievement tests. Each student in college will have to meet the norms of these tests before being eligible for a degree. There will be no course as such—but individual supervision of study based on the results of diagnostic tests. A student may take the achievement test at any time it is given and by passing it fulfill the requirement for a degree.

When I began teaching in this university no type of health course was given by any department. I decided to offer an optional course. My first semester I had six students. The course has grown until I have all that I can permit to enroll

because of a limited number of instructors. I am very happy in teaching personal hygiene. I teach men and women, young and old together, and I believe I get good results.

We believe that a course of this nature should be made a required subject for all freshmen.

One semester hour is not sufficient time.

I think we should have 4 instead of 3 hours.

I believe physiology and hygiene to be the most important single subjects in the curriculum. Two semesters are needed to adequately cover the material.

JUNIOR COLLEGES

Of the 448 junior colleges 285, or about 63 percent, returned our questionnaire. Of the schools making such return 159 (about 50 percent of those which reported and 35 percent of all) reported having a course in hygiene. As is the case for colleges and universities, the junior colleges offering a course fall into three groups: (1) Those requiring the course of all students; (2) those in which the course is wholly optional; and (3) those in which the course is required of certain groups of students. Only 57 of these institutions (35 percent of those reporting, 13 percent of all) fall into the first of these groups; 36 into the second; and 60 into the third. The percentage in the first group is slightly higher, so far as girls are concerned. In five additional schools the course in hygiene is required of girls only. In one more "hygiene may or may not be required depending on the requirements set up by the university of the student's choice."

JUNIOR COLLEGES REQUIRING HYGIENE OF ALL STUDENTS

Year in which course is offered.—In 34 of the 60 junior colleges of this group the course in hygiene is offered in the first year; in 6 schools, in the second year; and in 20, in both or either year.

Length of course.—In 3 of the group the course is covered in 12 class periods; in 13 it is given in 1 semester hour; in 1, in 1½ hours; in 31, in 2 semester hours; in 3, in 3 semester hours; in 1, 3½ semester hours; in 7, 4 semester hours; and in 1, 6 semester hours. In half the schools 2.

semester hours are devoted to hygiene and in 80 percent the time does not exceed 3 hours.

Subjects covered.—Fifty-six schools furnishing information mention personal hygiene; 48, bacteriology and communicable diseases; 48, sex hygiene; 45, first aid; 45, community hygiene; 43, anatomy and physiology; 42, drugs and medical care; 37, mental hygiene; 35, home hygiene; 31, reproduction and development (how sex hygiene is taught apart from these topics is not clear); 42, medical care, drugs, and narcotics; 21, comparative anatomy; and 18, child care.

Size of class.—The class does not number more than 10 in 1 school; not more than 15, in 1; 25 in 8; 30 in 4; 35 in 4; 40 in 12; 50 in 6; 60 in 6; 70 in 2; 75 in 3; 100 in 2; and 300 in 1. Thus, in 60 percent of these colleges the class does not exceed 40 students.

Training of the instructors.—In 11 of these schools the instructor is a graduate in medicine; in 15 his major interest is, or was, biology; in 15, physical education; in 3, health and physical education; in 2, science; in 2, athletics; in 1, health education; in 1, physiology and hygiene; in 1, domestic science; in 1, nursing; and in 1, pharmacy.

Method of instruction.—In 35, or more than half of these institutions, the instruction is chiefly by lecture; in 10 by textbook and recitation; and in 16 both methods are used. In 50, written exercises are required; in 29, laboratory or other demonstrations are used; in 19, sanitary surveys are made; and in 12, prepared outlines of lessons are furnished to the students.

Equipment.—By way of equipment, 50 schools report the possession of wall charts; 32 use microscopes and slides; 25 have a skeleton; 25, casts and models; 25, bacteriological cultures; 20 have some physiological apparatus; and 14 make use of motion pictures. One college reports the use of a live baby for the teaching of child care.

Of those which furnished information on the subject, 29 considered their equipment sufficient. One instructor, whose outfit consists of wall charts which cost nothing, is content with this equipment. In 24 schools the outfit was considered inadequate. Where adequate, the cost ranged

from nothing to \$4,000. In only 3 instances was an equipment costing less than \$2,000 considered adequate and the cost would average more than \$1,000. Where considered inadequate the cost was from \$25 to \$3,100, with an average of \$715.

Comments—

I suggest that the Federal Government require a course in hygiene in every college and university freshman year.

Classes are too large (35 students) ; time too short (24 hours).

Time not sufficient (1 semester hour).

We need twice the time (now 12 hours). Credit should be given.

One semester hour is not sufficient. Motion pictures are available but have not been used because of lack of time.

One semester-hour is inadequate.

Not enough time (36 hours) is allotted, and the class (96) is probably too large.

For personal hygiene 2 hours weekly for 1 semester should be considered a minimum. Human anatomy and physiology should be covered only as a tool subject.

My observation has been that this course is made too technical and not sufficiently practical. It is of much more importance to learn how to take care of oneself than to master book knowledge of the subject. However, I have yet to find an instructor who can put the information in a practical way. * * * It should be a 6-hour required course, but without general approval it would be most difficult to enforce.

JUNIOR COLLEGES OFFERING A COURSE IN HYGIENE WHICH IS
OPTIONAL

The details furnished by the junior colleges in which the course in hygiene is optional do not differ very much from those reported by the previous group. There is the same variety as to length of course, size of class, etc. The following comments are of interest:

Our course is of 1 hour per week for 1 semester. The first third of the course is largely devoted to an attempt to develop attitudes of understanding the best and highest plans and purposes of life. Emphasis is placed on the need of sound thinking so as to produce high morale, adequate vitality, and aggressive ideals of service. Reports on mental hygiene are used in this third of the course. The remaining two-thirds are devoted

to technical reports by student and instructor on the structure, function, and care of the body.

More time is needed. (Now 2 semester hours.) Many students (50 percent elect the course) affirm they spend as much time on the course as they do on others which carry three times as much credit. The difficulty is in transfer of credits, most of our students going to other institutions after they leave us. Most institutions allow only 1 or 2 hours of credit.

JUNIOR COLLEGES IN WHICH HYGIENE IS REQUIRED OF CERTAIN GROUPS, BUT IS OPTIONAL FOR ALL OTHERS

Junior colleges fall into two groups, (1) those in which the curriculum approximates that of the first 2 years of colleges and universities, and (2) those which serve largely as training schools for certain vocations. The colleges considered under these headings may furnish the usual freshman and sophomore academic or arts course but they all furnish special vocational training. There are 55 institutions in the present group. In addition there are 5 colleges requiring a course in hygiene of students in education but which is not open to others. In 35 of the 55 junior colleges of the present group a course in hygiene is required (usually by State law) of those who are preparing to teach; in 11, of those interested in home economics; in 10, of those who expect to major in physical education; in 3, of those who expect to study medicine; in 3, of those interested in nursing; and in 1 each, of those who will study pharmacy, science, science and literature, and agriculture.

In only one of these colleges requiring a course of teachers is this course one of less than 2 semester hours. In 19 it is of this length; in 9, of 3 semester hours; in 1, of 4; and in 1, of 6 semester hours. In 27 the class does not number more than 40. In 4 the number is 40; in 1, 45; in 2, 50; and in 1, 65.

In only 16 of the 35 schools requiring the course of students preparing to teach is hygiene elected by other students. In 12 of the 16 the percentage of these students taking the course is 10 or less, and in 8 it is 5 percent or less.

Comments.—

The course (of 28 hours) should be one of 3 hours.

We need more time (it is now 4 semester hours) and better equipment (now valued at \$1,000).

A young teacher who has little or no knowledge of physiology is very poorly equipped for the teaching of "Health" to young children.

There has been more interest in our course since it was taught by a physician and health officer.

I believe that our 3-hour lecture course should be made to include laboratory work of a general nature.

I have considered recommending that our course be required of all students.

Our course (3 semester hours) is too brief.

Two 3-hour courses are not sufficient for proper fundamentals for young teachers. Course should be required of all students.

We are considering making our course compulsory for all freshmen next year.

I feel that the greatest need is a course in human physiology and anatomy. The time does not permit the student to become acquainted with both structure and function.

One lecture a week for the year does not give time for covering the subject to any degree of thoroughness. It is difficult to keep up interest in a course which meets so seldom.

STATE TEACHERS' COLLEGES

No sharp line is to be drawn between teachers colleges and many institutions which are classified under the heading colleges and universities. Many of the latter train teachers and many of the former offer a liberal arts course. However, all of the teachers colleges train teachers, and it would seem highly important that teachers be adequately prepared in the matters of personal and community hygiene, including all phases of school hygiene.

Of 159 State teachers colleges 105 responded to our inquiry. All of the 105 offer a course in hygiene, and in 90 colleges which furnished information this course is required, as follows: Of all students, 54; of all in the department of education, 12; of "all seeking teaching credentials", 10; of all training for kindergarten or elementary schools, 10; and of all preparing for elementary or secondary school work, 4.

When offered.—The course in hygiene in this group of teachers colleges is offered in the freshman year in 35 schools; in the sophomore year in 18; the junior in 3; the senior in 1; the freshman and sophomore in 15; the sopho-

more and junior in 2; the junior and senior in 1; the freshman, junior, and senior in 2; the freshman, sophomore, senior in 2; the sophomore, junior, and senior in 2; and in all years in 7.

Time given to the subject.—In 5 of these colleges: 1 semester hour is assigned to hygiene; in 1, $1\frac{1}{3}$ hours; in 1, $1\frac{1}{2}$ hours; in 23, 2 hours; in 4, $2\frac{1}{2}$; in 6, $2\frac{2}{3}$; in 15, 3 hours; in 9, 4; in 3, 5; in 1, $5\frac{1}{3}$; in 1, $5\frac{1}{2}$; and in 8, 6 semester hours. It will be noted that in this small group of schools there is an extraordinary range of time given to hygiene. (The amount of time was not given by 6 institutions.)

Subject matter.—Personal hygiene is a topic in all these schools; bacteriology and communicable diseases in 84; first-aid in 67; mental hygiene in 65; home hygiene in 65; community hygiene, 60; medical care in 60; reproduction and development in 56; sex hygiene in 55; and comparative anatomy in 30.

Size of class.—In 4 colleges the class or section does not exceed 20 students; in 11, 25; in 18, 30; in 1, 32; in 16, 35; in 14, 40; in 3, 45; in 10, 50; in 2, 60; in 1, 70; in 1, 75; in 1, 90; and in 6, 100. In 50 or more than half of these institutions, the class does not exceed 35 members, and in 85 percent the class does not contain more than 50 students.

Instructors.—Where the question was answered the teacher of hygiene ranks as professor in 28 of these colleges; associate professor in 9; assistant professor in 10; head of department in 8; and instructor in 18.

The degree of doctor of medicine is held by 16 of the teachers; doctor of philosophy by 14; master of arts by 29; master of science by 6; bachelor of science by 9; bachelor of arts by 3; registered nurse by 2; mechanical engineer by 1.

Medicine was mentioned as the major field of professional training by 16; biology by 15; physical education by 14; health and physical education by 10; health education by 7; physiology by 6; public health nursing by 3; home economics by 3; hygiene by 2; education by 1; public health and biology by 1; science by 1; psychology and education by 1; animal husbandry by 1.

Method of instruction.—In 50 teachers colleges of this group the instruction is chiefly by lecture; in 53, by textbook

and recitation; and in 4, by both methods. In 64 institutions demonstrations are given in anatomy and physiology; in 88, written exercises are required; in 57, sanitary surveys are conducted; and in 49, outlines of lessons are furnished the students.

Equipment.—Eighty-five of these schools possess wall charts for demonstration purposes; 74 have a skeleton; 65 own anatomical casts or models; 57 use microscopes and slides; 44 possess physiological apparatus; 41 (or more than 45 percent) make use of motion pictures; and 37 exhibit cultures of bacteria. Three schools report the use of lantern slides, and one exhibits a cadaver and pathological specimens.

Of the respondents who furnished information on the subject, 40 are content with their equipment and 34 do not consider it adequate. Where an estimate of the cost of the outfit was given only three teachers mentioned an amount less than \$500, and eight give an estimate of more than \$3,000. Four of these persons mention that this equipment is a part of the outfit of the department of science or of biology. Where the outfit is considered inadequate it is valued by three of the instructors at \$2,500 and in only three instances it is valued at less than \$200. Where it is considered adequate the average cost is about \$1,750 and where inadequate it is \$810.

Comments.—

The instructors believe the course should be one of 3 instead of 2 semester hours.

For a college course in personal hygiene 36–40 hours seem adequate time. We have found an informal method of class discussion very successful. Also dividing class into smaller groups, headed by a chairman, to work on specific problems and report back to the class has interested the students. Most of these problems were selected by them.

Health instruction should include a minimum of anatomy and physiology.

Time (2 semester hours) is inadequate for proper treatment of subject. Background courses in science with emphasis on anatomy and physiology seem essential for real appreciation of personal and community problems.

I feel that a general course in college hygiene if it is based on some sound instruction in gross anatomy, physiology, pathol-

ogy, and includes bits of medical history, can be made very interesting and is potentially a very valuable course. I should like a little more time—4 instead of 2½ semester hours.

Time (2 semester hours) is ample and equipment adequate. We feel that if instruction is too technical it will not meet the needs of preservice teachers.

We feel that we accomplish much with the students. The material is all adapted to the immediate use of the prospective teachers and consequently they become much interested in the course. We use our own text which has been written with the idea of presenting just the pertinent material and consequently we waste no time with matter which does not touch the lives of the students. The course is kept up to date through the use of a wide range of current literature.

All students should have at least a 3-hour general course in health. All prospective grade teachers should have at least a 2-hour course in addition dealing with the special factors in child health and health administration in the schoolroom. Prospective high-school teachers who expect to have any health supervision work should have an additional 5-hour course.

We try to get hold of specialists in the field of health for lectures. We believe this makes the work more interesting and practical.

Our pupils are younger and less prepared than in many colleges and we cannot cover the ground satisfactorily in the two courses of 12 weeks each. We need a third course of 12 weeks, or 36 hours in all.

An allowance of 3 recitation hours and 2 laboratory hours per week for 18 weeks could be profitably used.

The time, 48 hours, is too brief. We could use double this allowance.

We could get better results with 24 hours for personal hygiene and 48 hours for home and community hygiene. The latter, however, should include methods of presentation as well as factual material.

We consider this one of our most valuable courses for teachers.

I find that personal conferences with students, using a score card for critical self-scoring, is helpful in making health knowledge materialize into health habits.

I do not feel that the courses offered here are adequate but we must manage the best we can with the equipment and staff now available.

NORMAL SCHOOLS

Our questionnaire was sent to 80 State and city normal schools and information was furnished by 54 institutions. Six of the group report that they offer no course in hygiene, 1 gives a course elected by about 70 percent of students; while in 47 schools there is a course which is either required of all students or of all those training for the profession of teaching. The following statistics concern the schools which have this required course.

Year in which course is given.—Some of the institutions of this group offer a 2-year course, some a 3-year and some a 4-year course. In 20 of the 47 schools in which it is required, hygiene is offered in the freshman year; in 6, the sophomore year; in 1, in the junior; in 2, in the senior year; in 4, in the freshman and sophomore; in 4, in the freshman and junior; in 3, in the freshman and senior; in 1, in the freshman, sophomore, and junior years; in 2, in the freshman, junior, and senior; and in 2, in all 4 years.

Length of course.—In 2 schools the course is completed in 1 semester hour; in 1, in $1\frac{1}{3}$ hours; in 10, in 2 semester hours; in 1, $2\frac{1}{3}$ hours; in 3, $2\frac{1}{2}$; in 10, 3; in 6, 4; in 2, 5; in 4, 6; in 1, $6\frac{1}{2}$; and 1, in 7 hours. In a third of the schools which furnished information on this point this course is covered in 2 hours or less and in about 60 percent, in 3 hours or less.

Topics covered.—Of the 46 schools which gave details concerning their course all mention personal hygiene; 41, community hygiene; 40, bacteriology and communicable diseases; 37, first aid; 36 (more than three-fourths), mental hygiene; 29, human anatomy and physiology; 26, home hygiene; 27, reproduction and development; 24, sex hygiene; 23, child care; 19, medical care, drugs, and narcotics; and 8, comparative anatomy.

Size of class.—In 7 schools the classes do not exceed 20 students; in 27 there are not more than 30; in 37 there are not more than 40; in 3 the classes are as large as 45; in 3 they reach the number of 50; in 1, 65; and in 1, 70.

Training of instructors.—In 8 normal schools the primary interest of the instructor was, or is, biology; in 6, nursing; in 6, health education; in 5, health and physical

education; in 3, physical education; in 3, psychology; in 2, chemistry; and in 1 each, science, sociology, art, history, botany, education, public health, and medicine. In only 1 school is a physician employed as instructor. The training of the instructor was not furnished by 12 schools.

In 1 school the instructor is an M. D.; in 4 schools he has obtained the degree of Ph. D.; in 21, that of M. A.; in 4, that of M. S.; in 6, B. A.; in 2, B. S.; in 1, B. Ed.; and in 1, the title of R. N. Seven of the schools did not furnish information on this subject.

Method of instruction.—In 9 schools the teaching is done chiefly by lecturing; in 16 a text or reference book with recitations is the principal method of instruction; and in 20 both means are employed.

Laboratory demonstrations are given in 25 schools; written exercises are required in 36; sanitary surveys are conducted in 21; and outlines of lessons are furnished to students in 20.

By way of equipment for demonstration, wall charts are owned by 36 schools; microscopes and specimens by 21; a skeleton by 21; anatomical casts or models by 20; physiological apparatus by 14; and cultures of bacteria by 12. Motion pictures are made use of by 15, or about 25 percent. No apparatus is mentioned by 6 schools.

Eighteen respondents find their equipment satisfactory and 22 unsatisfactory.

Comments.—

At least 3 clock hours per week is needed for the minimum of instruction.

We find insufficient background the chief limitation. We must give too much elementary training.

Our time (3 semester hours) is rather limited but it seems about all we can require.

I think there should be some health-education course each semester rather than only 2 semesters (4 semester hours are now required). This would give the student an opportunity to do more outside reading, experiments, surveys, etc.

One instructor is inadequate for health supervision and instruction in a teacher-training institution. Materials and equipment are far inadequate. Time is inadequate (4 semester hours) and classes are too large (35 to 65).

Surveys in connection with community health are particularly valuable. Also, the few lectures by local specialists (such as dentists, ophthalmologists, etc.) are much liked by students and seem to make a lasting impression.

We do not have the equipment to do the work we would like to do.

We should like to extend our course from 2 to 3 semester hours.

Our course has the dual purpose, that of preserving and improving personal health and of giving methods of teaching.

No doubt in some normal schools as well as in other teacher-training institutions the students are trained in methods of imparting knowledge of hygiene. In a few also the examination of children for physical defects and signs of disease are taught. It is unfortunate that this is not done in all teacher-training curricula. We mention this here because the addition of such teacher preparation to instruction in personal and community hygiene accounts for the considerable number of hours reported for the course by some institutions. This also accounts for the instruction being distributed, in a number of schools, over more than a year.

INSTITUTIONS FOR NEGRO STUDENTS

COLLEGES AND UNIVERSITIES

Questionnaires were sent to the 45 colleges and universities for Negroes and 32 responded. Of the 32 institutions, 10 offer a course in hygiene which is required of all students; 10 offer a course required of students training for teaching; and 1 for all students majoring in physical education. In 6 institutions the course is wholly elective. In the remaining 5 of the 32, no course is offered.

INSTITUTIONS REQUIRING A COURSE IN HYGIENE OF ALL STUDENTS OR OF ALL STUDENTS IN LIBERAL ARTS CURRICULA

Of the 10 colleges and universities of this group, 3 offer their course in the freshman year; 2 in the sophomore year; 1 in the freshman and sophomore; 1 in the freshman and junior; 1 in the freshman and senior; 1 in the sophomore and junior; and 1 in the freshman, sophomore, and junior years.

In 6 institutions the course is covered in 2 semester hours; in 1, in 3 hours; in 1, in 4 hours. The time is not made clear by the other respondents.

Nine institutions furnish instruction in personal and community hygiene; 8 in communicable diseases and their causes, reproduction and development, human anatomy and physiology, first aid, and sex hygiene; 5 in child care and in the principles of medical care.

The class does not exceed 40 in 7 schools, but it does not fall below 30; 1 reports a class of 50; 1 of 60; and 1 of 184.

The instruction is carried on by a physician in 4 schools and in 1 of these the physician has had graduate work in biology. In 2 the professor in charge has specialized in biology and hygiene; in 2 in biology; in 1 in home economics; and in 1 in physical education. The degree of M. D. is held by 4 of the teachers; that of M. A. by 3; M. S. by 3; and B. S. by 1.

In 4 schools the instruction is chiefly by lectures; in 3 by textbook and recitations; and in 3 both methods are employed. Nine institutions report the use of laboratory demonstrations; the same number require written exercises; sanitary surveys are made in 7; and lesson outlines are furnished in 6.

All of this group report the use of microscopes and slides; 8 have wall charts and casts or models; 7 have a skeleton; 6 have bacterial cultures; 4 use physiological apparatus; and 3 make use of motion pictures. Two schools mention that the equipment is a part of the outfit for the department of biology. Those reporting the use of the biology outfit are the only schools in which satisfaction is expressed with the cost of equipment, although in only one instance was this less than \$200, and the average cost was more than \$1,500.

INSTITUTIONS REQUIRING HYGIENE IN THE CURRICULA FOR TEACHER TRAINING

In this group of 11 colleges and universities, 4 offer the course in hygiene in the freshman year; 2 in the sophomore; 4 in the freshman and sophomore; and 1 in the junior and senior years. Two semester hours are devoted to it in 2 institutions; 3, in 4; 4, in 2; 6, in 2; and 8, in 1.

The class does not exceed 42 members in any of these schools.

Two of the instructors have had a training in medicine; 3 in health and physical education; 3 in physical education; 1 in education, physiology, and psychology; and 1 in nursing. Two have the degree of M. D.; 2 of M. A.; 4 of B. S.; 1 of B. A.; and 1 is a registered nurse. Teaching is done chiefly by lectures in 1 school; by textbook in 3; and both methods are used in the remainder. Laboratory demonstrations are reported by 8 schools; written exercises and sanitary surveys by 9; and prepared outlines by 6.

Eight schools report the possession of wall charts; six have a skeleton, anatomical models, physiological apparatus, microscopes and specimens, and bacteriological cultures; one school uses motion pictures; and one has a stereopticon. Of those which replied, four colleges are content with the apparatus which cost from \$500 to \$6,000. Five find their equipment, costing from \$25 to \$800, inadequate.

INSTITUTIONS WITH ELECTIVE COURSES

Of the five institutions of this group, two devote 3 semester hours to the course; one, 5 semester hours; one, which does not cover the subject of community hygiene, spends a total of 12 hours; and one college did not state the length of the course. The classes do not exceed 35 members.

In two institutions the instruction is conducted by a physician; in one by a biologist; in one the training of the instructor has been in physical education and zoology; in another, physical education and psychology. In two the instruction is chiefly by lecture; in two by textbook; and in one both methods are used. Three make use of written exercises and sanitary surveys, and two include also laboratory demonstrations. Two of these schools are equipped with a skeleton; three have casts and models; four possess wall charts; four use microscopes; two exhibit bacterial cultures; and three make use of motion pictures. One institution does not report any such equipment. Three of the five find their equipment adequate.

Since this is an elective course, the percentage taking it is of most interest. One school does not give information on

this point; in one the number is 5 percent; in one, 6 percent; and in two it is 10 percent.

One respondent comments:

The problem of teaching health to college students seems to be one of building upon the general knowledge that most of them have, and of tearing down the false notions they bring associated with this general knowledge. Our course has just been initiated and it has become quite evident that all students regardless of classification need health instruction.

TEACHERS COLLEGES

2
Of the 3 out of 12 teachers colleges which furnished information, 2 offer a course in hygiene. In one this is required of all students. The 1 normal school out of 11 which responded gives such a course to all enrolled.

JUNIOR COLLEGES

Seven out of twenty-two junior colleges furnished information. Six offer a course in hygiene. This is required of all students in one school and of all prospective teachers in elementary schools in another. In the remainder it is elective.

PROFESSIONAL AND TECHNICAL SCHOOLS

Of the 247 professional and technical schools listed in 1935, about 50 percent responded to our inquiry. Fifty-three of the seventy-five theological schools returned the questionnaire. In four of these attendance on a course in hygiene is required; in three there is an optional course; and in the remainder no course is offered. Three of the schools of theology accept only college graduates and may well expect that their instruction in hygiene was furnished in the undergraduate school. The colleges of law are strictly colleges of law.

Of the 25 technological schools and schools of mining, 20 responded. Eight have a required course and two an optional course.

All but two of the special schools devoted to the preparation of teachers of physical education responded, and the eight which replied all require courses in both personal and

community health covering from 2 to 4 semester hours of study.

REVIEW AND COMMENTS

We have come a long way in the development of instruction in hygiene since Thomas Cogan published his *Haven of Health*. The human organism remains the same in 1936 that it was in 1586, the environment affecting its well-being is essentially similar, but we know much more about the human body and about the conditions which affect its balance. It was a half-century after 1586 that William Harvey published his thesis on the circulation of the blood; it was 200 years later that Jenner made his great experiment; and it was nearly three centuries until the microbic origin of many diseases was established.

A hundred years ago all of the State teachers colleges and all of the colleges for women were doing what they could by way of furnishing instruction in health to their students. But of the colleges and universities probably only 1 of the 35 then flourishing had found a place for hygiene in its curriculum. At the present time about one-third of the institutions classed as colleges and universities require a course in this subject of those registered in their liberal arts curricula and 45 percent more provide a course which may be elected by any student.⁷ It is true that where such a course is not required only about 5 percent of students have sufficient interest to elect this subject but this number is a significant advance, after the lapse of six centuries, over the estimate by Roger Bacon of three one-hundredths of 1 percent, and that of persons about to pass out of existence. Of course it should be taken into account that the instruction in hygiene is not always what it should be or it is of a technical and professional nature and that the student some-

⁷A questionnaire on sanitation and health service was sent to all institutions of higher education 6 months subsequent to that from which the preceding statistics were derived and to this questionnaire there were added a few inquiries on the subject of health instruction. Replies were received from a number of colleges and universities which did not answer our first questionnaire and 60 of these institutions stated that they had a required course in informational hygiene. This number added to the 145 of the first group brings the total number of colleges and universities with such a requirement to nearly one-third.

times misses little by nonattendance. One may suspect as much when, in one institution a course is offered without acceptance while in another, the course is elected by some 80 or 90 percent of students.

Colleges for women seem not so much concerned with matters of health as a hundred years ago, but a very much larger percentage report a required course than is the case with colleges for men. There is a notable exception in the three institutions which prepare young men for military and naval duties, but when was health of more importance to those preparing for war than for those preparing for peace? In a few coeducational schools instruction in hygiene is furnished only for women, which would lead one to infer that health is not so important for the other sex, and yet the students in our military schools are men.

If attendance on a course in hygiene is a desirable thing, then our junior colleges do not live up to their opportunities as well as the colleges and universities, for only 35 percent report the offering of such a course and in only 13 percent is it a required subject for all students.

The teachers colleges do better than other institutions of higher education though not so well as they did a century ago. At least two-thirds of them offer a course and in more than 50 percent attendance is required of at least all who are preparing to teach in elementary schools.

A hundred years ago the course on Hygiene at Harvard consisted of seven lectures. Much concerning personal hygiene can be packed into that time by a teacher who knows his subject and is not intoxicated by it. In 1936 about a dozen colleges and universities find this allowance ample for their purposes, but in, at least two institutions the time devoted to the subject has been extended twentyfold. In most schools 2 semester hours seem, to the instructor, to furnish none too much time, and in a large percentage 3 semester hours are allotted to this subject.

A comparison of data derived from the present study with that from previous investigations is not possible for in the latter, selected lists of institutions were used. However, it would seem that, since the study by Dr. Storey, the amount of time devoted to the subject has, on the average,

been considerably lengthened, and the number of students in a class has been, on the average, much reduced.

It was recommended by the National Conference on College Hygiene in 1931^{*} that "6 semester hours should be regarded as the ideal time allotment for the required course and in most institutions the time allotment should be probably not less than 2 or 3 semester hours." It was also recommended that the course "be given academic credit on the same basis as other subjects."

The teaching in these courses is evidently not usually delegated to those of lesser rank in the faculty and it is notable that in 28 percent of the colleges requiring a course, at least one of the teachers has had a medical training, while in 10 percent an instructor has obtained the degree of doctor of philosophy. In about 70 percent the teacher has a master's degree. One does not acquire teaching ability with diplomas, but at least many of these instructors have been exposed to an extensive acquaintance with their subject. In not a few instances the teachers of hygiene were interested and trained in other fields of knowledge. Doubtless the financial or other circumstances of the school have brought about their appointment to positions for which they are ill-fitted. Whatever the cause, it is unfortunate for all concerned.

In 25 percent of these institutions the lecture method is found the most desirable. About 15 percent use a textbook, or reference books and recitations, and 35 percent combine these methods. Methods were not mentioned by other schools.

In the student himself the teacher of hygiene and physiology always has a laboratory, which fact, it is hoped, he never overlooks; but, besides, a large number (40 percent) use artificial laboratory demonstrations for making the subject real. A larger number (60 percent) own a skeleton; nearly as many casts or models of organs; and 25 percent make use of motion pictures.

Fully half our respondents are discontented with their equipment. It would seem that any institution could spare

^{*} Proceedings of the National Conference on Child Health. National Tuberculosis Association, New York, 1931.

at least \$300 with which a skeleton and a dissectable model could be purchased. The cost of equipping a college chemical or physical laboratory will run to 10 or 100 times this sum.

Where the course in hygiene is a professional one which may be elected by students in general the course is usually longer and the class smaller. The equipment for demonstration is also likely to be more extensive, and, with a larger number of exercises, it is more needed. Such a course may not be suitable for the average student.

There is an extremely wide range in equipment as indicated by estimates of its cost, but the amount needed will vary not only with the extent of the course but with the subjects included.

While all curricula in hygiene include the matter of personal health, only 85 percent report instruction in bacteriology and communicable diseases although some mention of this subject must surely be made in all courses. Consideration is given to the mental aspects of hygiene by about 80 percent, and some attention to sex hygiene is reported by as many schools. We have no means of knowing in detail the content of these courses.

The statistics from the teachers colleges do not differ essentially from those for colleges and universities, especially for the group of these latter institutions in which the work in hygiene is required of those in educational courses. The length of course reported by many of the teacher-training colleges is due in part to time devoted to methods in health instruction and possibly to practice teaching.

Dr. Storey in his study asked for information from theological schools and found that in only 7 of the 101 schools was a course in hygiene offered. Our questions went to the 70 independent schools which survive. We received replies from 53 and the number of such institutions still offering such a course apparently remains 7, while in 4 of the 7 it is required.

In a few instances one learns that the course in hygiene is required only of those who are excused from physical education. This strange practice is a survival of the notion, current a half century ago, that gymnastics and other physical activities were cures or preventives of all ills.

A respondent mentions the difficulty he finds in adapting his course to the various degrees of training to which his students have been exposed in the secondary schools from which they come. It is rare that any instruction concerning the human body is furnished in the last three grades of high schools, but at least one college and one university take the possibility of such schooling into account and exempt from the college course, or from a part of it, students who, by reason of similar courses in secondary schools or other colleges, secure credit by examination or acceptance of credentials by the department.

It is to be questioned whether any course in hygiene offered by a high school should exempt the college student from such a course as should be offered in college. It would seem that both these institutions have a duty to perform, but it is unfortunate that the lack of instruction in secondary schools should hamper the higher institution in making its course one of college rank.

In the Nineteenth Annual Report of the University of Illinois Health Service an account is given of a study of the health education received by 2,220 applicants for admission to that university made under the direction of Dr. John R. Cain. Only 7 percent had attended a course in "hygiene" in high school and 22 percent a course in "physiology." About 55 percent had been taught biology and 58 percent general science, but these two latter subjects are commonly offered in the ninth and tenth grades and the amount of instruction in hygiene in connection with these courses is "usually altogether inadequate for the responsibilities they will have to assume in life." Dr. Cain found also that hygiene and physiology are often taught by someone who is neither specially prepared nor specially interested in these subjects.

The statistics received from institutions for Negro students do not differ materially from those for white students except that in the former relatively fewer colleges and universities offer a course in hygiene. This is unfortunate if this subject is as highly important as many educators say it is. There is good evidence, however, in the statistics

derived from this study that in a majority of all colleges and universities it is not so considered.

The comments of instructors offer the most interesting returns from this study. The following seems curious: "Our required course was abolished on account of the large number of students attending the university." Just why increased numbers should make instruction in hygiene less essential is beyond our comprehension. It would seem to increase the obligation.

Most of the commentators refer to the brevity of their courses. Those with 1 semester hour of instruction think they should have 2 and many of those with 2 semester hours at their disposal wish for 3. One with 4 semester hours is "very well satisfied" but could use more time. A preference is expressed (and with good reason) for compact rather than extended courses—for 2 hours in 1 semester rather than 1 hour per week throughout the year.

As for methods, we would call attention to the following comment: "We have found that students are vitally interested in health if it is taught on a physiologic basis. Moving pictures of various physiologic processes are especially stimulating and X-ray films, charts, etc., are necessary." There are other comments to the same effect. One president, after emphasizing the importance of such instruction and suggesting a course of 6 semester hours remarks, "My observation has been that this course has been too technical and not sufficiently practical. I have yet to find an instructor who can put the information in a practical way." It takes an artist to fill such a requirement. Clifford Albutt said of the physician, "The best doctor is the best artist and the best medical artist is the master and not the servant of his science." The best teacher is the best artist and the best teacher of hygiene is the master and not the servant of that body of tradition which passes for "science" in his day.

One respondent echoes, after 300 years, the remarks on health of the "wisest of mankind." He says, "Our chief aim is to interest the student in solving his own health problems and to cultivate in him the habit of utilizing the available services when his own resources are insufficient." Sir Francis Bacon in his classic essay on health packed hygiene in this nutshell, "A man's own observation, what

he finds good of and what he finds hurt of, is the best physic to preserve health. * * * Despise no new accident in your body but ask opinion of it." The best of instruction in hygiene helps the recipient in observing what he finds helpful or harmful in his daily experience and directs him to the best-trained professional assistance in dealing with incidents that are beyond his own limited knowledge of his bodily machine.

There remains the puzzling, almost confounding, question as to why only a third of our colleges and universities require attendance on a course in hygiene by their students. Are these schools right in so doing or is the majority right? Why, a century ago, did only 2 out of 35 institutions of higher education make this requirement? Colleges and universities are collective human organisms and for an explanation we must look to the life experience of those who have shaped their educational policies. Francis Bacon wrote about health because of his physical frailty; John Locke, who preached health as fundamental in education, was badly hampered in his work by asthma; and Herbert Spencer, whose essay on health education has long been a classic, was a chronic invalid. Horace Mann was delicate in body, and Mark Hopkins was interested in medicine because of his own ill health. Francis Wayland studied medicine for 3 years. The first president of Cornell possessed "a constitution far from robust, for which there was need of special care." He was impressed with Spencer's argument that knowledge of physiology is fundamental in the curriculum—"that is to say, an account of the structure, functions, and proper management of the human body on which so much depends for every human being. * * *. But there was an additional reason for placing physiology first among the early studies of most of the courses and this was that it formed a very good beginning for scientific study in general." White had found an admirable teacher, and "so was adopted the plan of beginning most courses with an extended course of lectures upon human physiology, in which, to real practice in investigation by the class, was added the hearing of a first-rate lecturer."

* White, Andrew W. Autobiography. New York, The Century Company, 1905.

It is difficult for those whose bodies are quite satisfactory servants of their souls to conceive of the need of special concern over physical affairs, and objections have been raised to Spencer's assertion, but when one's ambitions are hampered by faults in the machinery on which the fulfillment of those ambitions depend, he becomes not only conscious of the value of health but concerned for the physical welfare of others. Whether or not an educational institution requires a course in hygiene depends, in general, on whether or not those who have shaped its present policies have found their own physical foundations quite adequate for their purposes. There seems to be no other explanation for the absence of hygiene in the college curriculum.

APPENDIX

COPY OF QUESTIONNAIRE USED IN THIS STUDY

UNITED STATES DEPARTMENT OF THE INTERIOR,

OFFICE OF EDUCATION,

Washington, D. C., February 1935.

DEAR SIR: This Office is interested in obtaining information concerning the health instruction of college students and would appreciate a reply to the questions listed below.

Very truly yours,

Assistant Commissioner.

Institution..... Address.....

Official reporting.....

1. Does your institution offer a course in personal and community hygiene open to all students? Yes..... No.....
2. Is this course wholly optional? Yes..... No.....
3. What percentage of students elect this course?
4. In what schools or colleges of your institution is it a required subject? (Please list below.)
.....
.....
5. About what percentage of students in other schools and colleges of your institution elect this course?
6. In what college year or years is this course offered? (Under-score.) Freshman, Sophomore, Junior, Senior.
7. What is the total number of semester hours?
8. Are the following topics covered? (Check.)

- (a) Bacteriology and communicable disease (including tuberculosis).
 - (b) Comparative anatomy.
 - (c) Reproduction and development.
 - (d) Human anatomy and physiology.
 - (e) Personal hygiene (physical).
 - (f) Mental hygiene.
 - (g) Home hygiene.
 - (h) Child care.
 - (i) Community hygiene.
 - (j) Medical care, drugs, narcotics.
 - (k) First aid.
 - (l) Sex hygiene.
9. In what size classes is instruction given?
10. What is the academic rank of the instructor in this course?
.....
11. What is his professional training?
- (a) Major fields of interest?
 - (b) Minor fields?
 - (c) Degrees?
12. Is the method dominantly by—
- (a) Lecture? Yes..... No.....
 - (b) Textbook and recitation? Yes..... No.....
13. Does the method include—
- (a) Laboratory or other demonstrations? Yes..... No.....
 - (b) Written exercises? Yes..... No.....
 - (c) Sanitary surveys and reports? Yes..... No.....
 - (d) Printed or mimeographed outlines of lessons? Yes.....
No.....
14. What is your equipment for demonstrations—
- (a) Skeleton? Yes..... No.....
 - (b) Casts and models? Yes..... No.....
 - (c) Wall charts? Yes..... No.....
 - (d) Physiological apparatus? Yes..... No.....
 - (e) Microscopes and slides? Yes..... No.....
 - (f) Bacteriological cultures? Yes..... No.....
 - (g) Motion pictures? Yes..... No.....
 - (h) Others?
15. About what would you estimate the total cost of this equipment?
16. Do you consider the equipment adequate for your purposes?
Yes..... No.....

Please send any printed or mimeographed outlines, tests, or other material which might be of interest to other schools.

Any comments on your experience with regard to time needed for adequate instruction, methods of instruction, etc., will be appreciated.